

# HEADBAND ADJUSTMENT DEVICE

## BACKGROUND OF THE INVENTION

### 1. Field of The Invention:

The present invention relates to a headband adjustment device and particularly to an adjustment device attached to a head enclosing apparatus especially such as lunettes for loosening or tightening a headband by way of a resilient adjustment plate.

### 2. Description of Related Art:

It is quite often that a variety of head wearable tools such as headbands, helmets, lunettes, protective spectacles and headlamps are used in our daily lives. The major requirements of the head wearable tools are in that they have to be comfortable during being worn and the tightness thereof has to be adjustable so as to fit different head measurements. In fact, adjustable tightness can enhance the wearing comfort to some extent.

Taking the conventional lunettes as an example, the headband adjustment device is an essential part for the lunettes and disposed at both lateral sides of the lunettes so as to be adjusted the tightness thereof. However, it is inconvenient that the adjustment device at both lateral sides of the lunettes has to be adjusted and the adjustment device has spoiled the facial smoothness of the wearer. In addition, the adjustment device has increased the gross size of the lunettes such that they become not easy for the lunettes to be worn or carried about.

Another type of conventional lunettes has the adjustment device be disposed at the back of the head but it is provided with a complicated way for tightness adjustment.

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## SUMMARY OF THE INVENTION

A primary object of the present invention is to provide a headband adjustment device, which includes a base, an adjustment seat, at least a press piece, a resilient adjustment plate and two band shafts. The base provides a base through hole. The adjustment seat is joined to the base and has a wing plate at two opposite lateral sides thereof and an adjustment frame at two ends thereof. The press piece is disposed beside the respective wing plate with two ends thereof extending a press wedge end. The adjustment plate is flat with a middle protrusion top and at both lateral sides of the protrusion top having a fixing projection respectively, at a bottom near both ends thereof having a lift guide groove with a plate slant extending toward the two ends respectively to interfere with ratchet gears on the headband. The band shafts each have an end projection and the headband encloses the respective band shaft and extends outward inversely via the adjustment frame so as to be held in place with the ratchet teeth engaging with the adjustment plate. When the press piece is pressed, the press slant ends lift the guide grooves to increase the space between the adjustment plate and the band shafts for the headband being adjusted.

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## BRIEF DESCRIPTION OF THE DRAWINGS

The present invention can be more fully understood by reference to the following description and accompanying drawings, in which:

Fig. 1 is an exploded perspective view of a headband adjustment device according to the present invention;

5 Fig. 2 is a sectional view of the headband adjustment device shown in Fig. 1; and

Fig. 3 is a fragmentary sectional view of the headband adjustment illustrating the headband being actuated.

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## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to Fig. 1, basically, a headband adjustment device according to the present invention includes a base 1, a adjustable seat 2, two press pieces 3, a resilient adjustment plate 4 and two band shafts 5.

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Wherein, the base 1 is solid and is used for contacting with the head of a wearer so that the bottom thereof is preferable to have an arched shape with soft material for keeping in touch with the head of the wearer. The top, i.e., the central area at the outer side of the base 1, is a flat base surface 11 with a base groove 12 across two lateral sides thereof. Further, a base hole 13 is provided below the base groove 12 to pass through the two lateral sides. Basically, the base 1 in Fig. 1 has a configuration with a thick middle part and two thin end parts, but it is noted that the preceding configuration is not a limitation. In order to be fixed with the adjustment seat 2, a base pin 14 can be provided to pierce the base hole 13.

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The adjustable seat 2 is composed of two lateral wing plates 21 corresponding to the two lateral sides of the base 1 and two horizontal plates 22

disposed inside the lateral wing plates 21. A longated opening 23 is formed between the two horizontal plates 22 as shown in Fig. 1. Further, each horizontal plate 22 at the outer side thereof has an adjusting frame 24 respectively.

The preceding wing plates 21 each may provide a wing hole 211 corresponding to the base holes 13 with an engaging slot 212 is disposed over the respective wing hole 211. A plate hole 213 is disposed beside two ends of the engaging slot 212 respectively with an elevation thereof slightly higher than the engaging slot 212. Both ends of the respective wing plate 2 are provided with an engaging hole 214 and a guide hole 215 is provided at the central position of the respective wing plate 21 above the engaging slot 212.

The press pieces 3 are used for being pressed by the user and each press piece 3 at the center thereof has two parallel pressing bars 31 corresponding to the engaging slot 212. The pressing bars 31 at the outer sides thereof have a jaw 311 to prevent the respective press piece 3 from disengaging from the engaging slots 212. A bar clearance 312 is formed between the pressing bars 31 to be inserted with a spring 313. Besides, the respective press piece 3 at both ends thereof, which are disposed outside the outer sides of the pressing bars 31, extends a pressing wedge end 32 corresponding to the preceding plate hole 213 so as to be movably inserted into the plate holes 213. Due to the press pieces 3 being oppositely positioned, it is possible for the user to the press pieces 3 with two fingers at the same time.

The resilient adjustment plate 4 at the upper middle area thereof has a protrusion top 41 and at both lateral sides thereof has a fixing projection 42 respectively. The bottom of the adjustment plate 4 near both ends thereof has a lift guide groove 43 with a plate slant 44 extending to both ends respectively.

Each of the band shafts 5 at both ends thereof has an end projection 51 for being inserted into the engaging holes 214 for winding the band.

Referring to Fig. 2 in company with Fig. 1, the adjustable seat 2 is joined to the base 1 first with the base pin 14 passing through the wing holes 211 and the base hole 13 while the adjustment device of the present invention is assembled. Next, the press pieces 3 are inserted into the engaging slots 212 respectively with the press slant ends 32 being inserted into the plate holes 213. Then, the springs 313 are placed in the bar clearances 312 and the band shafts 5 are joined to the adjustable seat 2 with the end projections 51 being inserted into the engaging holes 214. Finally, the resilient adjustment plate 4 is joined to the adjustable seat 2 with the fixing projections 42 being engaged to the guide holes 215. Fig. 2 shows the head band A extends outward after enclosing the two band shafts 5 and the head band A is provided with a plurality of unidirectional ratchet teeth B equally spacing apart from each other to resist moving backward as soon as the band is held in place firmly.

Referring to Fig. 3 with reference to Fig. 2 again, when the headband is adjusted the tightness thereof, the two press pieces 3 at both lateral sides of the adjustment device can be pressed to move the press slant ends 32 inward so as to lift the guide grooves 43 upward gradually by way of the slant surface of the respective press slant end 32 and it results in a larger space between the plate slants 44 and the band shafts. Thus, the ratchet teeth B can pass through the space when the headband A is dragged or loosened and the required length adjustment for the headband can be obtained. After that, the press pieces 3 are released and the springs 313 expand outward to move the press slant end 32 outward such that the plate slants 43 can descend with the resilient adjustment

plate 4 to the original state of locating with the ratchet teeth B being blocked.

As the foregoing, it can be understood that the headband adjustment device of the present invention is placed at the back of the head and the adjustment of headband A is performed by way of pressing the press pieces 3.

5 Nevertheless, a single press piece can be used at one lateral side of the adjustment device to perform the function of adjustment instead of the preceding two press pieces 3.

10 Therefore, it is appreciated that the headband adjustment device of the present invention can be mounted at the back of the head effectively to overcome the deficiency of the conventional adjustment device having increasing sized parts at both lateral sides of the head and to increase the space for modeling design thereof. Furthermore, it has been mentioned that the headband adjustment device is suitable for such as lunettes, protective spectacles and headlamp and it is a n w field of innovative headband adjustment device.

15 While the invention has been described with reference to a preferred embodiment thereof, it is to be understood that modifications or variations may be easily made without departing from the spirit of this invention, which is defined by the appended claims.

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